Suisun Marsh Monitoring Program
Channel Water Salinity Report

Reporting Period: December 2001

CONTENTS

This report is organized into the following sections and subsections:

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SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

The California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. This requirement is based on SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions. Channel water salinity conditions in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance".

The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Status
C-2	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Status
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates is included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

RESULTS

Channel Water Salinity Compliance

State Water Resources Control Board channel water salinity standards for the Suisun Marsh were met at all five compliance stations during December 2001 (Table 1). Compliance with channel water salinity standards was determined for each compliance station by comparing December mean high-tide specific conductance (SC) with their respective standards. The standard for Marsh compliance stations December 2001 was 15.5 millisiemens per centimeter (mS/cm). Table 1 lists monthly mean high-tide SC at the compliance stations.

The progressive monthly mean SC for each station is used to track salinity conditions during each month (Figures 1 and 2). The progressive mean is calculated for each compliance station by averaging mean high-tide SC for a given day and all previous days of that month. New progressive mean calculations begin at the start of each calendar month.

Delta Outflow

High Delta outflow occurred in December 2001 (Figure 3). The monthly mean Net Delta Outflow Index (NDOI) for December is listed below:

Month	Mean NDOI (cubic feet per second)
December	22,497

The NDOI is the estimated average daily rate of outflow from the Delta.

Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during December 2001 is listed below:

Month	Total Rainfall (inches)
December	9.29

Suisun Marsh Salinity Control Gate (SMSCG) Operations

The SMSCG were under normal operation at full bore for December 2001 with flashboards in place with operating boat lock.

Date	Flashboard / boat lock Status	Gate Status
December 1 – December	In place / Operational	Tidal Operation

DISCUSSION

Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

The State Water Resources Control Board, in 2001, approved another three years of study on the Suisun Marsh Salinity Control Gates to evaluate a method to allow unimpeded passage of adult salmon past the gates on their upstream migration. The evaluation of the modified flashboards was discontinued after two years because it is was not successful. The new study is to evaluate the effectiveness of leaving the boat lock open when the gates are operating. The boat lock evaluation started in the fall of 2001 and will continue through the fall of 2003.

Observations and Trends

Conditions during the Reporting Period

Channel water salinity conditions in the Marsh met the standard in December 2001. Initially well below the standard at most stations (excepting Morrow Island), salinity gradually declined throughout the month (Figures 1and 2). The decline appears to have

occurred at a constant rate, despite the drop in Delta outflow during the middle of the month (Figure 3).

Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for December 2001 were compared with means for those months during the previous nine years (Figure 4). Means at all compliance and monitoring stations indicate that December 2001 was a historically low year. Specific conductance values moderately resemble the depressed year of 1998 except for S-35, in which the end month specific conductance is much higher.

Table 1

Monthly Mean High Tide Specific Conductance at Suisun Marsh Water Quality Compliance Stations

December 2001

Station	Specific Conductance (mS/cm)*
Collinsville, C-2	1.45**
National Steel, S-64	1.43
Beldon's Landing, S-49	2.78
Volanti, S-42	2.90**
Sunrise Club, S-21	3.90

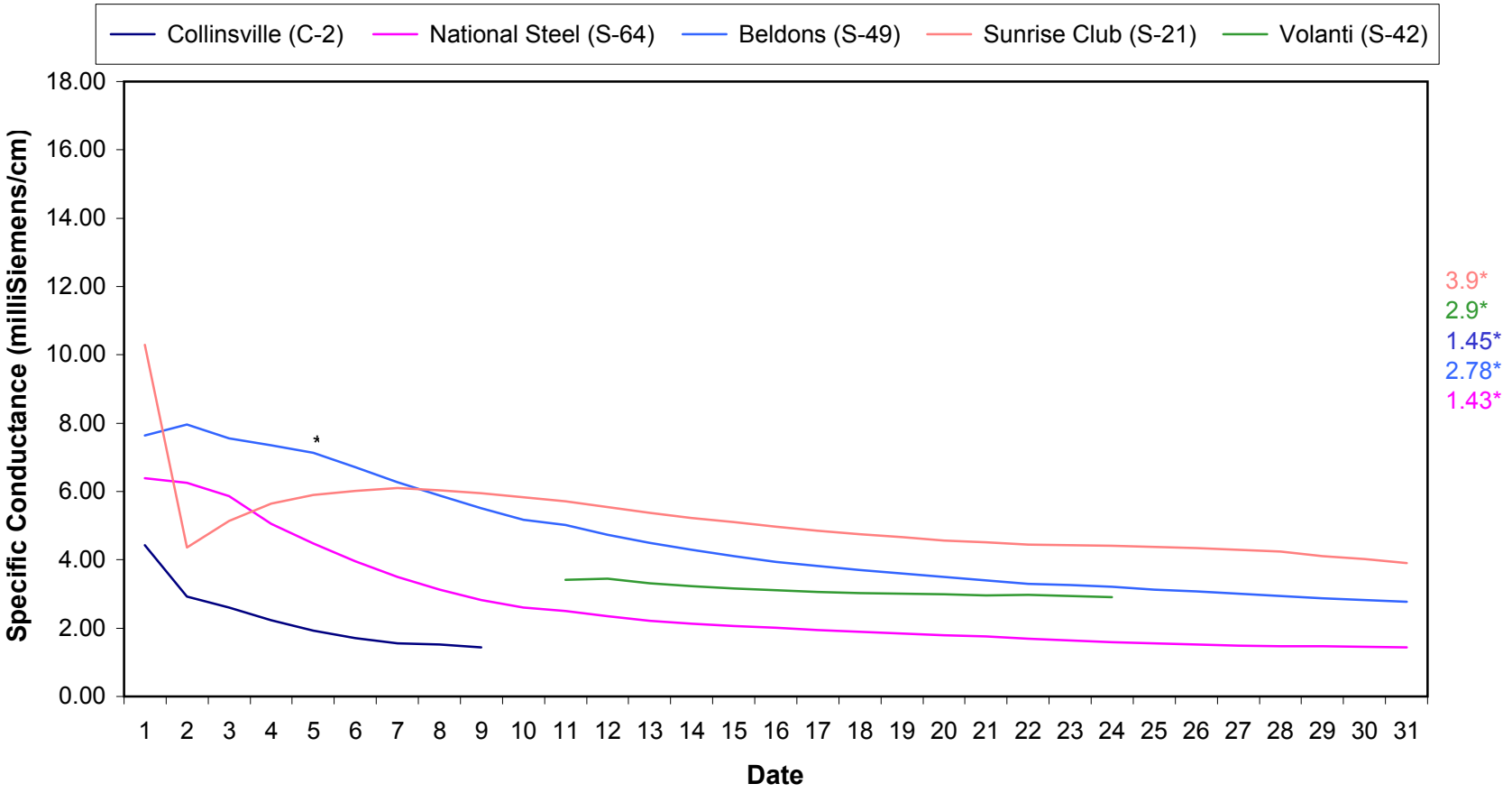
*= milliSiemens per centimeter

**= values do not reflect end of month means due to equipment failure during the month

Note: SWRCB standard for December 2001 for is 15.5 mS/cm.

Figure 1. Suisun Marsh Calendar Month Progressive Mean of the Specific Conductance at High Tide December 2001

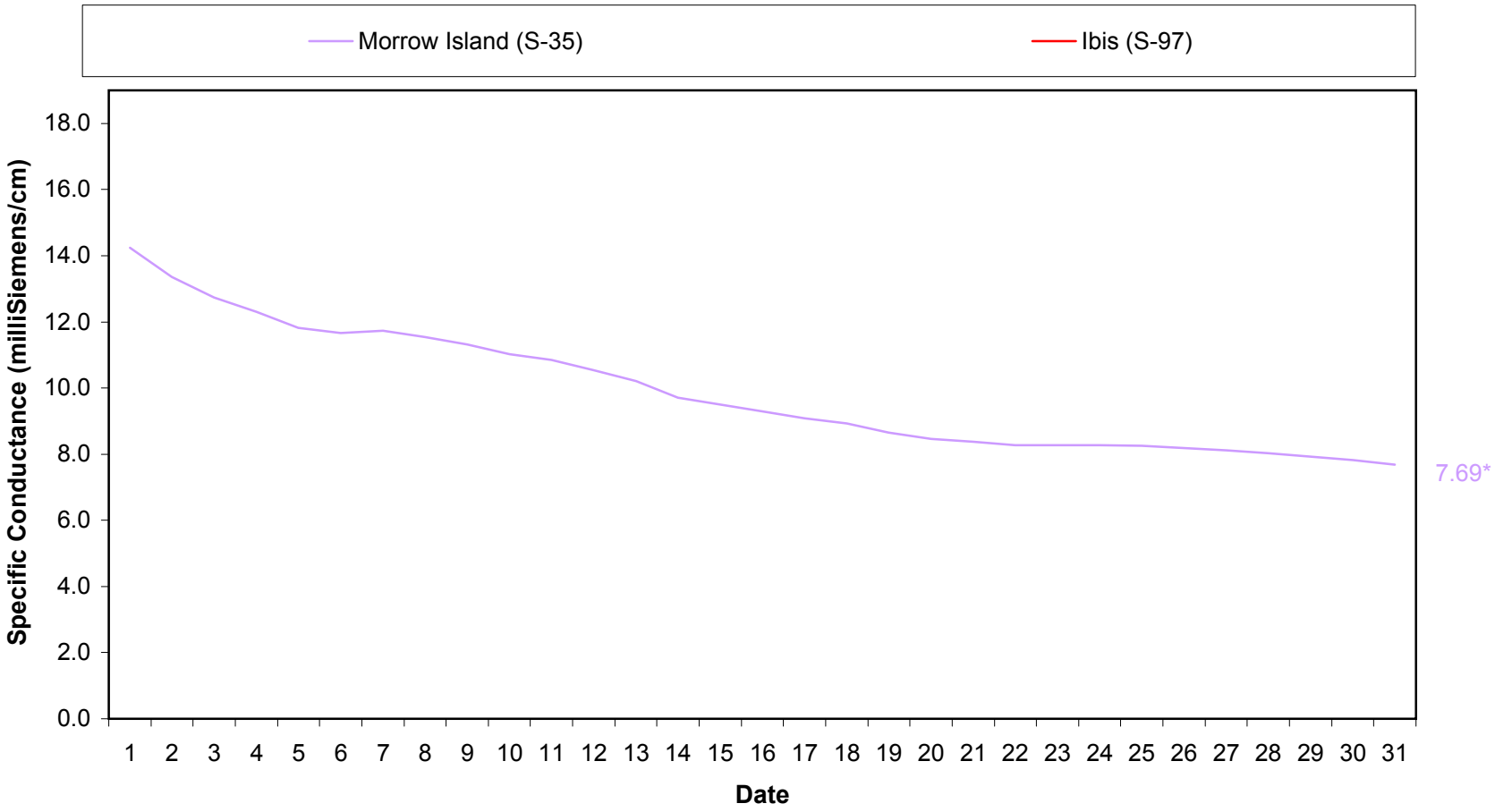
Standard = 15.5 mS/cm



* = monthly mean specific conductance at high tide.

Note: Data missing from C-2 and S-42 due to equipment failure.

Figure 2. Suisun Marsh Daily Mean High Tide Specific Conductance at Stations S-35, S-97 and Mallard Island December 2001



* = monthly mean specific conductance at high tide.

Note: S-97 data missing due to pressure transducer failure.

Figure 3. Daily Net Delta Outflow Index For December 2001

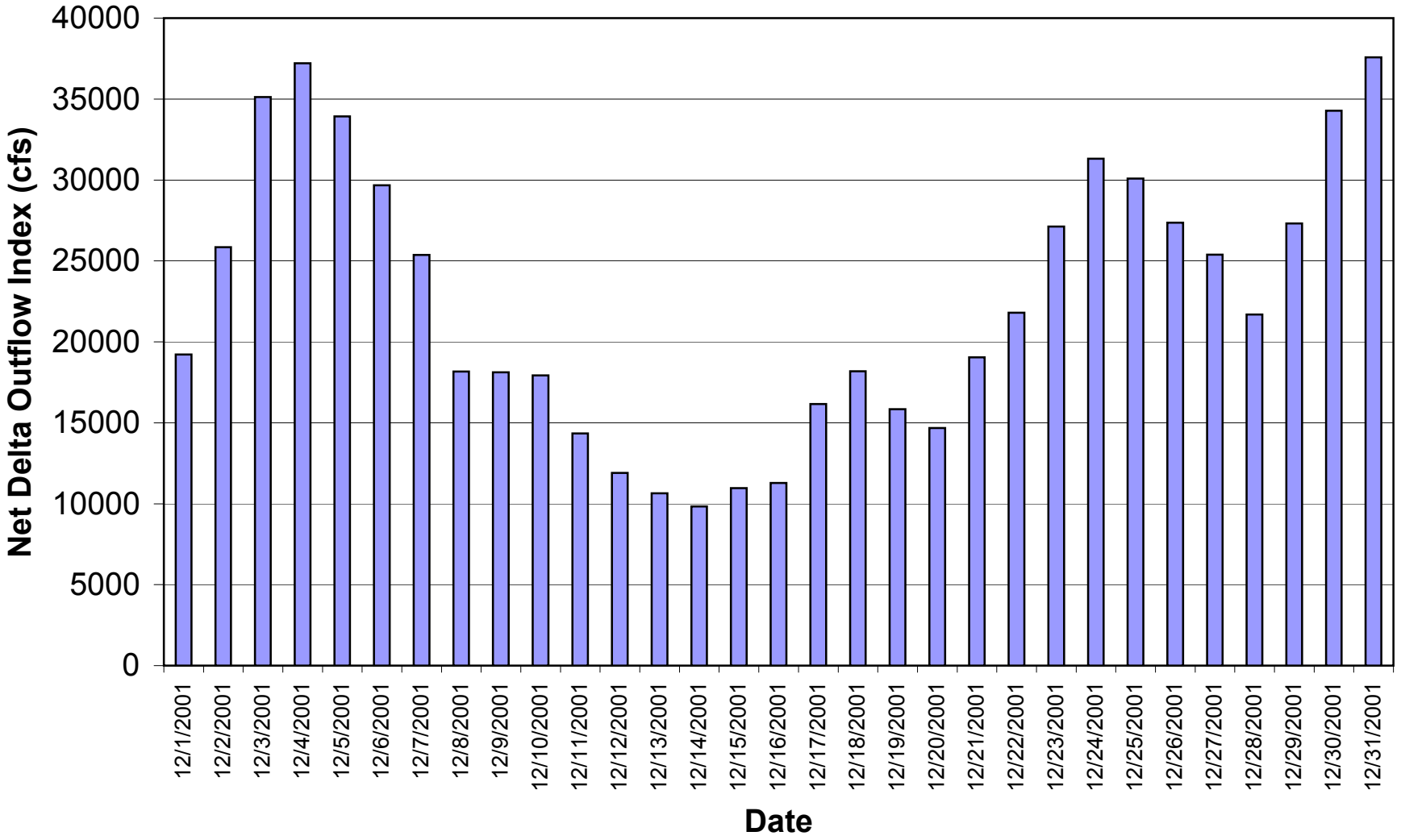
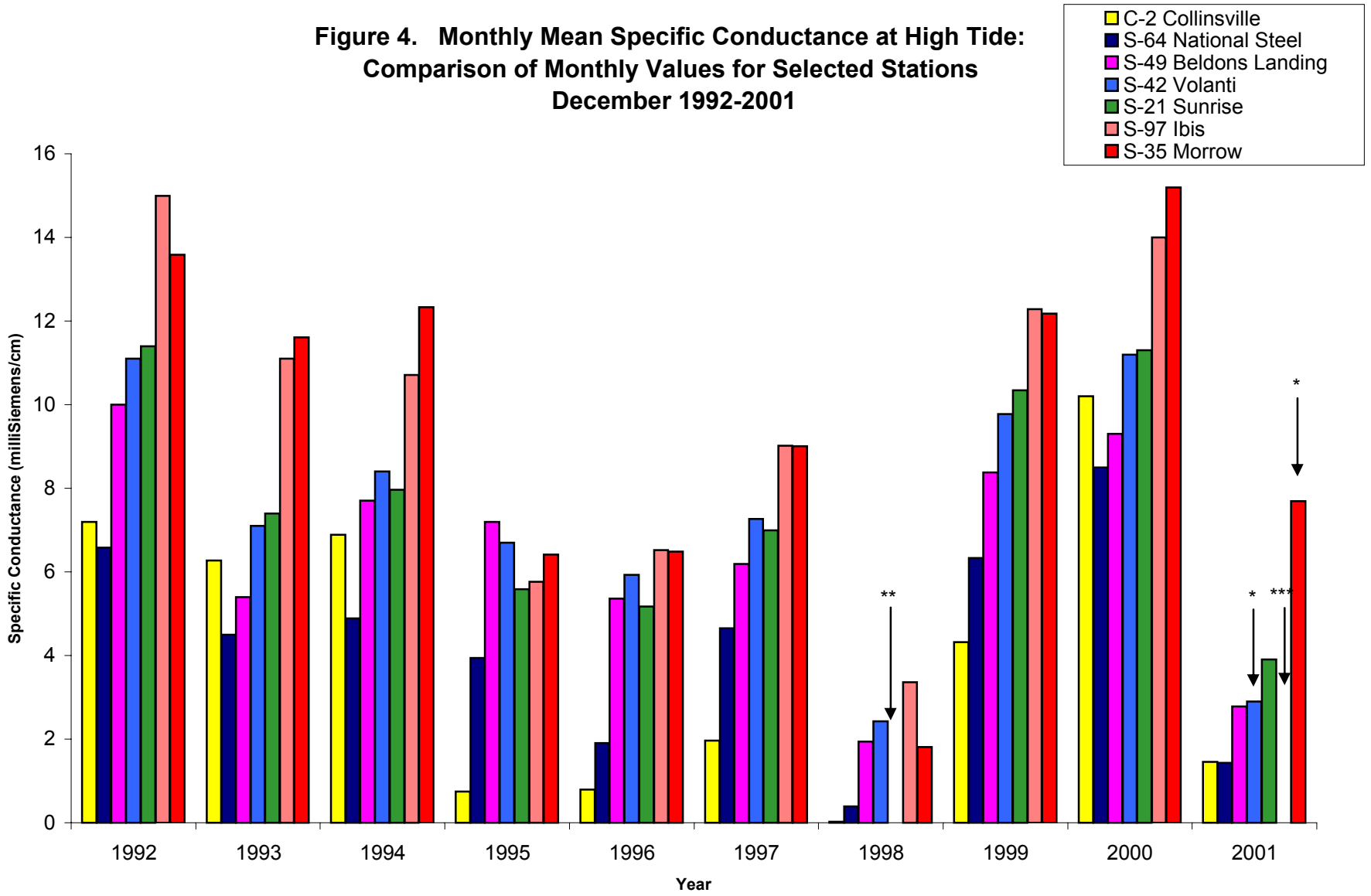


Figure 4. Monthly Mean Specific Conductance at High Tide: Comparison of Monthly Values for Selected Stations December 1992-2001

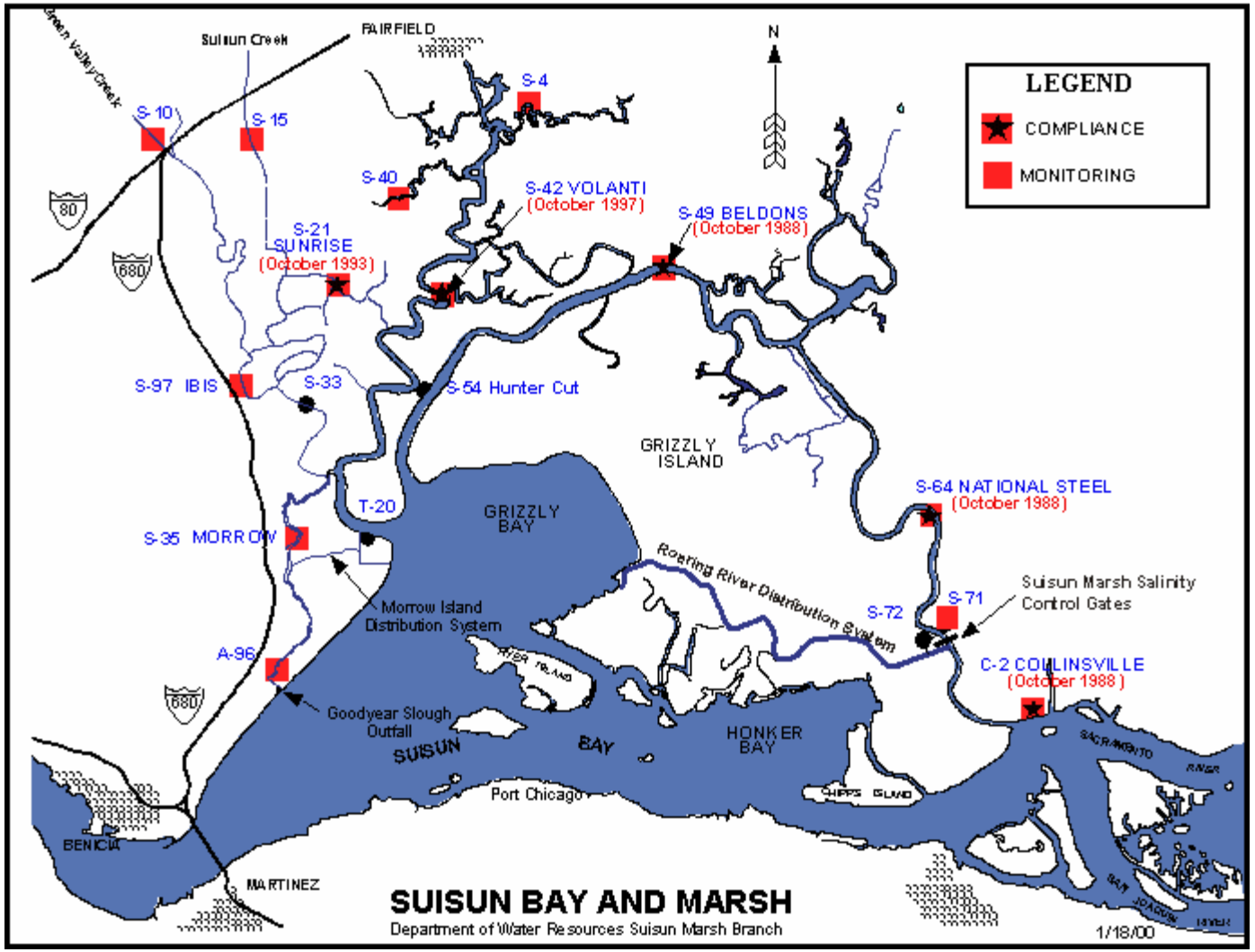


* Data does not reflect the end month mean. Data collection was halted before the end of the month due to equipment failure.

** Data was not obtained due to power problems at the station.

*** Data was not obtained due to equipment failure.

Figure 5


LEGEND
COMPLIANCE
MONITORING
N
Suisun Creek
FAIRFIELD
S-10
S-15
S-4
S-40
S-42 VOLANTI
(October 1997)
S-49 BELDONS
(October 1988)
S-21
SUNRISE
(October 1993)
S-97 IBIS
S-33
S-54 Hunter Cut
GRIZZLY
ISLAND
S-64 NATIONAL STEEL
(October 1988)
T-20
GRIZZLY
BAY
S-35 MORROW
Roaring River Distribution System
Suisun Marsh Salinity
Control Gates
S-72
S-71
Morrow Island
Distribution System
A-96
C-2 COLLINSVILLE
(October 1988)
Goodyear Slough
Outfall
SUISUN
BAY
HONKER
BAY
Port Chicago
BENICIA
MARTINEZ
SUISUN BAY AND MARSH
Department of Water Resources Suisun Marsh Branch
1/18/00